## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As set forth on page 3 of the office action mailed 20 August 2007, the scope of the claimed "random patter" is unclear.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 32, 34-36, 38, 39, and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler (Document titled "Vibration Damping Material for 1995 Chrysler JA Program Door Beam" filed July 12, 2006) in view of the Admitted Prior Art (specification, page 1), Ligon (US 5358397), Hanley (US 5266133), Williams (US

6347799), Wycech (US 4978562), Cameron (US 6120899), and optionally further in view of Bryant (US 3872548).

Chrysler teaches a method of forming a vibration damping system for a door assembly of an automotive vehicle comprising the steps of forming a vibration damping material by extrusion, allowing the vibration damping material to become substantially tack free, mechanically attaching the vibration damping material to a door beam, mounting the door beam having the vibration damping material thereon onto a vehicle door, and expanding the vibration damping material so that it contacts and adheres to the exterior panel structure of the door. (page 1; Figures)

Chrysler does not explicitly recite that the vibration damping material adheres to a door outer panel, as claimed. However, it is clear from the Admitted Prior Art that it is typical for the expandable material to expand to the outer door panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to adhere the vibration damping material to the outer door panel because one of ordinary skill in the art would have been motivated to practice the invention in accordance with typical manufacturing techniques.

Chrysler does not teach the claimed step of applying the expandable vibration damping material with an extruder. Ligon explains that expandable sealant materials have been applied in a manner like that of Chrysler, as preformed materials (column 1, lines 15-39), or by applying pumpable sealants (column 1, lines 40-60). Ligon teaches automated robotic extrusion with a mini applicator as an alternative to these traditional methods for the advantages of high production rates and high precision (Abstract;

column 2, lines 9-63; Figure 1). Bryant is optionally cited for a general recognition in the art that human application of sealant gives rise to errors in which joints are not properly sealed (column 1, lines 33-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply an expandable material by extruding because one of ordinary skill in the art would have been motivated to achieve the high production rate and high precision taught by Ligon or to avoid the problem of human error well known in the art, as evidenced by Bryant.

As further evidence of advantages of applying the expandable material by extrusion, Williams is cited. In a method of applying expandable material for sealing cavities in automotive applications where improved sag resistance is desired, Williams prefers extrusion coating as a method of applying the expandable material (Abstract; column 2, lines 58-60; column 4, lines 8-31; particularly column 7, lines 58-60). Thus Williams provides additional motivation to use an extrusion process such as that taught by Ligon to apply the expandable material, as set forth above.

Chrysler does not explicitly recite expanding the vibration damping material by heat, nor does Chrysler recite a specific material. Thus one of ordinary skill in the art would have been motivated to look to the prior art for suitable materials. Hanley teaches a dry, initially non-tacky sealant material which is expandable upon heating and is useful as an acoustic baffle with excellent sound attenuation properties (Abstract; column 1, lines 1-53; column 3, lines 5-44; column 13, lines 33-39). Hanley indicates the material is suitable for extrusion (column 10, lines 4-15). Hanley's expandable material provides improved adhesion to metals typically used in automobile

manufacturing which are typically somewhat oily, superior water absorption properties over previously used materials, and excellent durability (column 2, lines 4-8; column 3, lines 1-5; column 13, lines 33-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the expandable material taught by Hanley in the method of Chrysler as modified above because one of ordinary skill in the art would have been motivated to achieve the adhesive strength, durability, and water absorption properties taught by Hanley.

As to the new limitation of a hollowed metal door reinforcement, such reinforcements are generally known for providing suitable reinforcement and low weight, as evidenced by Wycech (Abstract; Figures 1-11; column 3, lines 45-68; column 4, lines 1-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a claimed hollowed metal door reinforcement because one of ordinary skill would have been motivated to use a reinforcement having low weight in accordance with the teachings of Wycech.

As to the new limitation of providing the expandable material as pellets having a particular size and an adhesive shell, such is generally known in the art for providing nontacky pellets which can be readily fed to an extruder. For example, Cameron explains that adhesive pellets may be provided with a plurality of components in a core portion and a high softening point tackifying adhesive resin as a shell component in order to provide pellets which are nontacky at relatively high temperatures, which are easily fed to an extruder, and which mix in the extruder to provide the desired composition (Abstract; column 5, lines 16-22; column 6, lines 44-57; column 8, lines 18-

46; column 19, lines 23-28). Cameron also suggest pellets having a size within the claimed range (column 11, lines 5-12). It is noted that Applicant suggests using the expandable composition of Hanley (specification, page 9, line 32 to page 10, line 3). Hanley also teaches the use of a tackifier which only becomes adhesive at elevated temperature (column 4, lines 14-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed pellets because one of ordinary skill in the art would have been motivated to achieve the above noted advantages in accordance with Cameron.

As to the new limitations of application of the expandable material in a viscoelastic state wherein the material is maintained in place upon activation such that it spans in the claimed manner in order to adhesively bond to a door outer panel such that a walled or expansive structure is formed which reduces vibration and wherein the expandable material remains rigid over the claimed temperature range, all of these limitations flow naturally from the modified method of Chrysler as set forth above. The process of extrusion causes a material to flow, thus satisfying the claimed viscoelastic state. The maintaining of the material on the door reinforcement and adhesive bonding are inherent in the material of Hanley when applied by extrusion as set forth above. In particular, Hanley explains that the material becomes tacky and sticky at elevated temperature, adheres to structural surfaces, and remains in place (column 2, lines 42-45; column 5, lines 59-69). Such expansion naturally produces the claimed expansive structure. Further, since Hanley is directed to one of Applicant's suggested materials and as set forth above and motivation has been provided to apply and activate such

material in the claimed manner, it can reasonably be assumed that the claimed functional limitations which result from this process will also be satisfied. No objective evidence has been provided to the contrary.

Regarding claimed 34, Hanley teaches activation during heating which occurs as part of a painting operation (column 13, lines 5-32). While not explicitly recited, it is well known that activation during a painting operation avoids the necessity of a second heating step for activation of sealant materials. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the expanding step during such a painting operation because one of ordinary skill would have been motivated to avoid the need for an additional heating step.

Regarding claims 38 and 42, it is generally well known in the art of automobile manufacture to create subassemblies at one location and transport them to a manufacturing line at another location where they are incorporated into an automobile which is being built. Such methods are employed, as is well known, for the motivation of reducing the need to provide warehouse space for subassemblies and for the motivation of reducing the amount of equipment necessary in assembly lines. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed step of extruding by a supplier and shipping to a manufacturer because one of ordinary skill would have been motivated to reduce warehouse space and equipment at the manufacturing site. Since the sealant taught by Hanley is non-tacky at ambient temperature, the limitation of claim 38 would be met when performing the steps of extruding by a supplier and subsequently shipping to manufacturer.

Additionally, one of ordinary skill in the art would have readily appreciated that it would be desirable to transport the sealant of Hanley in a non-tacky state since it is well known that tacky substances used in the automotive industry easily adhere to unintended surfaces or workers. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed step of allowing the material to return to a non-tacky state because one of ordinary skill in the art would have been motivated to avoid the sealant sticking to unintended surfaces or workers.

Regarding claim 39, it appears from the Figures in Chrysler and its short description, as well as Applicant's arguments filed June 6, 2007 (pages 9, 10; Exhibit A), that the sealant was applied as a single strip. Thus the expected manner of applying the expandable material as modified by Ligon would be to apply a long strip of expandable material, which meets the claimed "single bead". It would have been obvious to one of ordinary skill in the art at the time of the invention to extrude the expandable material as a single bead because one of ordinary skill would have been motivated to form a strip of expandable material in the manner suggested by Chrysler to obtain the desired vibration damping taught by Chrysler.

Regarding claim 41, the reinforcement suggested by Wycech is tubular.

Regarding claim 43, Hanley teaches that the expandable material can expand between 100% and 1500%. Chrysler teaches the use of an expandable material for vibration damping. It is well known to one of ordinary skill that increased expansion results in the advantage of reduced weight and cost because less material is able to occupy the desired volume. Accordingly, one of ordinary skill would have been

expected to perform routine experimentation in order to optimize for weight and cost while achieving the desired property of vibration damping taught by Chrysler. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed degree of expansion because one of ordinary skill in the art would have been motivated to achieve the desired vibration damping while optimizing for weight and cost of the expanded material.

5. Claims 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of the Admitted Prior Art, Ligon, Hanley, Williams, Wycech and Cameron, and optionally further in view of Bryant as applied to claims 32, 34-36, 38, 39, and 41-43 above, and further in view of any one of Johansson (EP 0398586 A1), Kracke (US 5013597), or Ritzema (US 6024190).

Regarding claim 40, Chrysler as modified by the Admitted Prior Art, Ligon, and Hanley does not teach applying the expandable material as a plurality of nodes. It is noted that the claimed plurality of nodes does not distinguish over a discontinuous pattern of expandable material.

The examiner's position is that one of ordinary skill in the art would been motivated to apply the expandable material in a discontinuous pattern because the material is expensive and has a significant mass and a discontinuous pattern uses less material than a continuous pattern. For example, Ritzema teaches that expandable foam for vibration reduction is expensive and a discontinuous pattern saves material and money (Figures 1 and 2; column 3, lines 38-60; column 2, lines 58-61). Kracke

teaches that sound insulating material has significant mass and that a discontinuous pattern can significantly reduce the mass of material used (column 1, lines 43-64; column 2, lines 18-62). Johansson teaches that a foam sound insulation material can be provided in a discontinuous pattern in order to cut costs by reducing the amount of material used, even though it may result in a reduction of stiffness of the construction (Abstract; column 1, lines 37-51; column 3, lines 35-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the expandable material in the modified method of Chrysler in a discontinuous pattern because one of ordinary skill in the art would have been motivated to reduce mass or cost of material.

Claim 43 is rejected here in the alternative with Ritzema, Kracke, or Johansson cited as evidence of the examiner's statement that it was well known to one of ordinary skill in the art that the cost and/or weight of a sound absorbing layer are important factors which should be reduced while maintaining desired sound absorbing properties.

6. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of the Admitted Prior Art, Ligon, Hanley, Williams, Wycech and Cameron, and optionally further in view of Bryant as applied to claims 32, 34-36, 38, 39, and 41-43 above, and further in view of Kracke or Ritzema.

Regarding claim 44, Chrysler as modified by the Admitted Prior Art, Ligon, and Hanley does not teach applying the expandable material as a plurality of nodes in a random pattern thereby forming the claimed chamber areas.

Kracke teaches a sound absorbing layer with a pattern of recesses, indentations, or knobs in order to reduce weight and provide adequate sound insulation (Abstract; column 1, lines 43-65; column 2, lines 18-62). The claimed random pattern of nodes to form the claimed chamber areas does not distinguish over the pattern of various knobs and indentations suggested by the Figures in Kracke (Figures 1-6). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the expanded material in the modified method of Chrysler as a plurality of nodes in a random pattern thereby forming the claimed chamber areas in order to reduce weight while still providing adequate vibration insulation in accordance with the teachings of Kracke.

Ritzema teaches a vibration absorbing layer with reduced contact area between the vibration absorbing layer and a vibrating layer in order to reduce the transmission of vibrations (column 2, lines 58-67). Ritzema also teaches that such a pattern reduces the amount of material used and thereby reduces cost (column 3, lines 38-60). It is clear from Figures 1 and 2 that the pattern suggested by Ritzema includes raised portions which satisfy the claimed nodes and which form chamber areas which inherently absorb vibrations and sound frequencies because any chamber of air will dampen vibrations to a certain extent. Regarding the claimed random pattern, any pattern is a random pattern because any pattern can be considered a pattern randomly selected from known patterns, absent a clear definition in the specification as to what is meant by the claimed random pattern. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the expanded material in the modified

method of Chrysler as a plurality of nodes which contact adjacent nodes in a random pattern thereby forming the claimed chamber areas in order to reduce cost and also to reduce the transmission of vibrations in accordance with the teachings of Ritzema.

7. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of the Admitted Prior Art, Ligon, Hanley, Williams, Wycech and Cameron and optionally further in view of Bryant as applied to claims 32, 34-36, 38, 39, and 41-43 above, and further in view of Fitzgerald (US 2002/0074827).

Regarding claim 40, Chrysler as modified by the Admitted Prior Art, Ligon, and Hanley does not teach applying the expandable material as a plurality of nodes. It is noted that the claimed plurality of nodes does not distinguish over a discontinuous pattern of expandable material. Claim 40 is rejected here in the alternative to show additional motivation for arriving at the claimed invention.

The examiner's position is that one of ordinary skill would have been motivated to apply the expandable material in a discontinuous pattern because Fitzgerald teaches such for allowing greater access of heated air to the expandable material during heat activation, leading to improved expansion (Abstract; Figures 1 and 8; paragraph 5). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the expandable material in Chrysler as modified by the Admitted Prior Art, Ligon, and Hanley in a discontinuous pattern because one of ordinary skill in the art would have been motivated to provide improved expansion in accordance with the teaching of Fitzgerald.

8. Claims 45-48 and 50-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of Ligon, Hanley, Williams, Wycech and Cameron, and optionally further in view of Bryant.

Each reference is applied as above in the rejection of claims 32, 34-36, 38, 39, and 41-43. Since the claims rejected here do not recite an outer door panel, the Admitted Prior Art is not applied here.

Regarding the expandable material composition limitations of claims 53-55, these limitations are clearly met by the expandable material of Hanley (column 4, lines 55-68; column 6, lines 30-35; column 7, lines 35-45).

Regarding claim 56, since the expandable material of Hanley displays excellent adhesion to metals typically used in automobile manufacturing (column 13, lines 32-51), it is clearly capable of bonding in the claimed manner. It is noted that the limitation of "for bonding" does not positively require bonding, but merely the capability of bonding. Regardless, the material of Hanley would inherently bond to the door beam and exterior panel structure when used in accordance with the teachings of Chrysler as modified by Ligon due to the adhesive characteristics of the expandable material taught by Hanley.

9. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of Ligon, Hanley, Williams, Wycech and Cameron, and optionally further in view of Bryant as applied to claims 45-48 and 50-55 above, and further in view of any one of Johansson, Kracke, or Ritzema.

Each reference is applied as above in the rejection of claims 40 and 43. Since the claim rejected here does not recite an outer door panel, the Admitted Prior Art is not applied here.

10. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysler in view of Ligon, Hanley, Williams, Wycech and Cameron, and optionally further in view of Bryant as applied to claims 45-48 and 50-55 above, and further in view of Fitzgerald.

Fitzgerald is applied as above in the rejection of claim 40. Since the claims rejected here do not recite an outer door panel, the Admitted Prior Art is not applied here.

***Response to Arguments***

11. The declaration of Todd Deachin filed 03 April 2008 is not persuasive for the following reasons. It is unclear why Mr. Deachin indicates that the extruded expandable strip and mechanically attached expandable strip have the same composition "to my knowledge and belief". What is meant by "to my knowledge and belief"? This does not constitute a positive statement that the two strips have the same composition. Thus it is unclear if the improved sag resistance is due to attachment by extrusion or to the material composition. Similarly, Mr. Deachin's statements of belief on page 3 of the declaration are not persuasive because these are not positive statements supported by factual evidence. Further, as the director of design and development for the assignee of the current application, Mr. Deachin's beliefs cannot be considered objective evidence.

Alternatively, as set forth in the previous office action on page 6, Applicant's recognition of improving sag resistance does not make the claims patentable since this advantage would flow naturally from following the suggestion of the prior art to use extrusion for improved precision and production rate. In view of Ligon's teachings, and optionally further in view of Bryant, the examiner's position is that Mr. Deachin's declaration does not outweigh the motivation of improving precision and production rate.

12. The declaration of Thomas Kleino is not persuasive for the following reasons. To establish a showing of commercial success, the declaration must clearly establish that the commercial success is due to the claimed invention. Mr. Kleino states that about 8 million door beams incorporating the disclosed technology have been sold. However, Mr. Kleino does not specifically indicate that all of these door beams have incorporated the claimed limitation of extruding the expandable material onto the reinforcement beam. Further, as director of sales and marketing of the assignee of the current invention, Mr. Kleino's beliefs on pages 2 and 3 of the declaration do not constitute objective evidence. Also, there is no indication of sales prior to incorporation of the technology, nor is there any indication of other factors which may have affected sales, such as marketing or trends to use preassembled parts in auto manufacturing. Accordingly, the examiner's position is that commercial success has not clearly been shown to be a direct result of the claimed process which involves extruding the expandable material onto the reinforcement beam.

13. Applicant's arguments filed 03 April 2008 have been fully considered but they are not persuasive.

Applicant argues that Ligon and/or Hanley should not be applied because they do not disclose i) material expanding across a space, ii) sag resistance, iii) material being maintained in place by its own external surface, iv) forming a new walled or expansive structure to reduce vibration, or v) the expandable material in the external panel structure being generally disposed perpendicularly "to surface under the automotive vehicle". In response, Ligon and Hanley were not applied for these teachings. As set forth above in the claim rejections, these limitations flow naturally from Ligon's suggestion to provide expandable material of Chrysler by extrusion. Regarding v), it is not clear what is meant by perpendicularly "to surface under the automotive vehicle". This limitation is not in the claims, and accordingly this argument does not appear to be commensurate in scope with the claims. Regarding transportation prior to mounting, this limitation was addressed in the office action mailed 20 August 2007 at the bottom of page 6 extending onto page 7. Official notice was taken with respect to well known automobile manufacture practices of creating subassemblies at one location and transporting to another location where they are assembled into an automobile. Applicant has not challenged this assertion of what is well known.

14. Applicant requests clarification as to the availability of Fitzgerald as prior art. The effective date of Fitzgerald is 31 January 2000, and thus Fitzgerald qualifies as prior art

under 35 USC 102(e). The examiner acknowledges that recent changes in form paragraphs used by the USPTO now recite 35 USC 103(a) in obviousness rejections. This new heading refers to the use of section (a) of 35 USC 103. It doesn't refer to the use of prior art which qualifies under 35 USC 102(a). The qualification of prior art is not listed in 103 rejections.

## *Conclusion*

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. TOLIN whose telephone number is (571)272-8633. The examiner can normally be reached on M-F 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael A Tolin/
Examiner, Art Unit 1791

/Richard Crispino/
Supervisory Patent Examiner, Art Unit 1791